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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/530,388	07/06/2000	WOLFGANG STELZIG	10191/1355	7376

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EXAMINER

ZAHEDIAN TAJNAKI, GHOLAMREZA

ART UNIT PAPER NUMBER

2666

DATE MAILED: 11/03/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/530,388

Applicant(s)

STELZIG ET AL.

Examiner

Zahedian-Tajniki GholamReza

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 10-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 July 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the details as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Figures. 1, 2, 3, 4, 5, 6, 7, and 8 are objected to because they are missing descriptive labels.

Information Disclosure Statement

2. The information disclosure statement filed on 4/27/2000 fails to comply with 37 CFR 1.98(a)(3) which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

The English translation of Document 195 39 259 has not been provided.

Specification

3. The title of the invention is not descriptive. See 37 CFR 1.72(a) and MPEP § 606. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Routing in survivable wireless networks".

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

Regarding claims 16 and 17, the specification does not disclose a situation where the reception of a packet from the data source 21 causing a bus station to transmit a packet with a specific direction vector (up or down) and in a specific time slot.

Regarding claim 18, the specification does not disclose a situation where the combination of packet size, transmission information, and remaining residual transit time being factors in prioritizing packet transmission by bus stations.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 10-12 and 15-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Brett B. Stewart (hereinafter Stewart) U.S. Patent No. 6,201,794.

Regarding claim 10, "position information with respect to each other bus station in relation to a sequence including the bus station;" is anticipated by routing tags which are indicative of points on a route taken through the network by the route determining message from the transmitting node to the destination node. See column 2, lines 5-9.

"determining from the transmission information a position information on the one of the bus stations that is transmitting;" is anticipated by the routing tags which provides routing information for subsequent messages from the first to the second node. Therefore, a node receiving a message with a routing tag can determine the identity of the node that originally transmitted the message. See column 2, lines 5-12.

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"determining a time slot belonging to one of the bus stations on the basis of the transmission information and the position information thereof;" is anticipated by the ability of the master routing node's ability to direct transmission of routing messages periodically from each node. See column 4, lines 45-48. Given the function of a master routing node can be performed by any or all of the nodes, therefore, each node is potentially capable of deciding when (in which time slot) to transmit the routing messages. See column 6, lines 7-14.

"sending the communication including the data packet after the data packet is received, the communication being sent in a next time slot belonging to that bus station." Is anticipated by the function of master routing nodes being implemented in each node within the network as described above. Therefore, each node within the network can be implemented to transmit the received message in a predetermined time slot. See column 6, lines 7-14.

Regarding claim 11, "the communication includes a direction vector indicating that a sequence will be run through in one of a first direction and a second direction that is opposite the first direction" is anticipated by Stewart disclosing that based on traffic conditions and other priorities, as may be programmed by the user, a decision is made at the information transfer point 109 on how to best route the message to its destination. This implies that a user can define a routing table such that full duplex traffic between a pair of origination and destination nodes to traverse the same path and in opposite directions. See Column 3 lines 10-14.

Regarding claim 12, "receiving another communication including another data packet of a data source;" is anticipated by the information transfer points or message routing points 109, 111, 113, and 115. These routing points receive data packets and forward them to the next nodes as specified by the algorithm. See column 3, lines 5-14.

" sending, on receiving a communication from the data source, a communication with the other data packet to the bus stations." is anticipated by the information transfer points or message routing points 109, 111, 113, and 115. These routing points receive data packets and forward them along the predetermined routes to the next nodes as specified by the algorithm. See column 3, lines 5-14.

Regarding claim 15, "an arrangement for sending a communication with the direction vector in the first direction when a communication is received from a data source" is anticipated by master routing node 500 transmitting routing information to other nodes after it has received the routing information as a result of sending pilot routing messages. See Fig. 5, Column 3 lines 60-67 and column 4, lines 41-43.

Regarding claim 16, "an arrangement by which, when a communication is received from one of another bus station and a data source having a data packet, a communication having the direction vector in the second direction and the data

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packet of the received communication can be sent." Is anticipated by any of the routing nodes or information transfer points. These devices receive and retransmit application data, pilot routing messages, as well as routing messages sent to them by the master routing node 500. See column 3, lines 6-13 and column 4, lines 32-43.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stewart in view of Chai-Keong Toh (hereinafter Toh) U.S. Patent 5,987,011.

Stewart discloses a wireless communications network with routing points that transmit pilot messages at predetermined intervals or in response to commands from a master routing node. However, Stewart differs from the claimed invention because he does not disclose any provision for monitoring and repetition of transmitted messages in certain directions.

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Toh discloses a routing method for ad-hoc mobile networks where mobile stations explore the best communications routes by exchanging route exploration messages that includes passive or active acknowledgement flows. The passive acknowledgement comprises receiving at a mobile host an information signal previously sent by the mobile host (Source) to one of its neighboring mobile hosts (downstream destination) that has been transmitted back. The source host monitors the channel and retransmits the previously sent signal if a passive or active acknowledgement is not received with a certain period of time (see Column 4, lines 19-34). Toh's algorithm does not require the destination hosts to monitor or retransmit the passive acknowledgement messages they sent back to the source host.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the Toh's active or passive acknowledgement flows into Stewart's communications network in order to improve the routing algorithm.

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stewart in view of Yoram Ofek et al (hereinafter Ofek) U.S. Patent 5,297,137.

Stewart discloses a wireless communications network with routing points that transmit pilot messages at predetermined intervals or in response to commands from a master routing node. However, Stewart differs from the

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claimed invention because he does not disclose whether or not the routing nodes use congestion management schemes for transmission of messages they have received from different sources. Additionally, Stewart differs from the claimed invention because he does not disclose any prioritization scheme for transmission of messages having different lengths.

Ofek discloses a process for routing data packets in a multi-node communications network. Also, Ofek discloses that preferred programs or algorithms for routing and controlling the flow of data around the network require that data be transmitted in both directions over the network links. (See Column 4, lines 58-63). Further, Ofek discloses switch 16, controller 20, and input/output buffers that provide the required fairness algorithm by controlling access to the network (See column 3, lines 38-46). It is well known in the art that some fairness algorithms use buffer management to regulate network access and transmission of messages in the network. One of buffer management schemes is to program buffers to send messages in certain time slots.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the fairness algorithm of Ofek into Stewart's communications network to improve and enhance the routing algorithm.

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8. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stewart in view of Danny Hin-Kwok Tsang et al (hereinafter Tsang) U.S. Patent 6,047,000.

Stewart discloses a wireless communications network with routing points that transmit pilot messages at predetermined intervals or in response to commands from a master routing node. However, Stewart differs from the claimed invention because he does not disclose whether or not the routing nodes use congestion management schemes for transmission of messages they have received from different sources. Additionally, Stewart differs from the claimed invention because he does not disclose any prioritization scheme for transmission of messages having different lengths.

Tsang disclose a packet scheduling system in which a plurality of first-in-first-out input buffers are provided each corresponding to a respective input data stream to a switching node or multiplexer. Further, Tsang discloses a method by which credit is allocated to each incoming stream with reference to the onward transmission (See column 3, lines 56-58). The decision over which stream will next be transmitted is not simply based upon which stream has the greatest amount of credit, but on other parameters such as the size L of the packet to be transmitted and the bandwidth S allocated to a particular stream. The smaller the packet size and the larger the bandwidth, the greater the chance the packet to be transmitted next. Also, Tsang discloses that parameters may be selected

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to implement different fairness criteria which may include setting the criteria such that smaller packets having higher priority for transmission over larger packets.

See column 5, lines 18-26.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the Tsang's algorithm in Stewart's communications network in order to improve the routing algorithm.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Brett B. Stewart U.S. Patent No. 6,201,794 discloses Network with efficient message routing.

- Danny Hin-Kwok Tsang U.S. Patent No. 6,047,000 discloses a packet scheduling system.

- George A. Melnik U.S. Patent No. 5,978,364 discloses method for routing data packets within a wireless, packet-hopping network and a wireless network for implementing the same.

- Aninda V. Dasgupta, U.S. Patent No. 5,926,101 discloses a method and apparatus for routing messages in a network of nodes with minimal resources.

- Chai Keong Toh, U.S. Patent NO. 5,987,011 discloses a routing method for ad-hoc mobile networks.

- Markkula, Jr et al, U.S. Patent No. 4,939,728 discloses network and intelligent cell for providing sensing bidirectional communications and control.

- Papadopoulos et al, U.S. Patent No. 5,602,836 discloses multiple access cellular communication with circular interleaving and reduced dropped-packet runlength.

- Andrej Brodnik et al U.S. Patent No. 6,266,706 discloses a fast routing look up system using complete prefix tree, bit vector, and pointers in a routing table for determining where to route IP datagrams.

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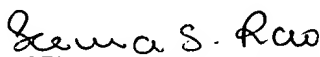
INQUIRY

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zahedian-Tajniki GholamReza whose telephone number is 703-305-0343. The examiner can normally be reached between 7:30 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 703-308-5463. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306 for regular communications and 703-308-5463 for after Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-1113.


Zahedian-Tajniki GholamReza


SEEMA S. RAO 10/20/03
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

October 15, 2003